CC Technical Documentation
RM-11 Series Transceivers

Troubleshooting - Antennas

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Troubleshooting - Antennas

This troubleshooting guide addresses potential failures that can affect the antenna performance of the RM-11 phone, and discusses methods for correction of these failures.

Failures and Corrective Measures

Figure 1: RM-11 phone, front and back view

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Missing Internal Antenna Cap

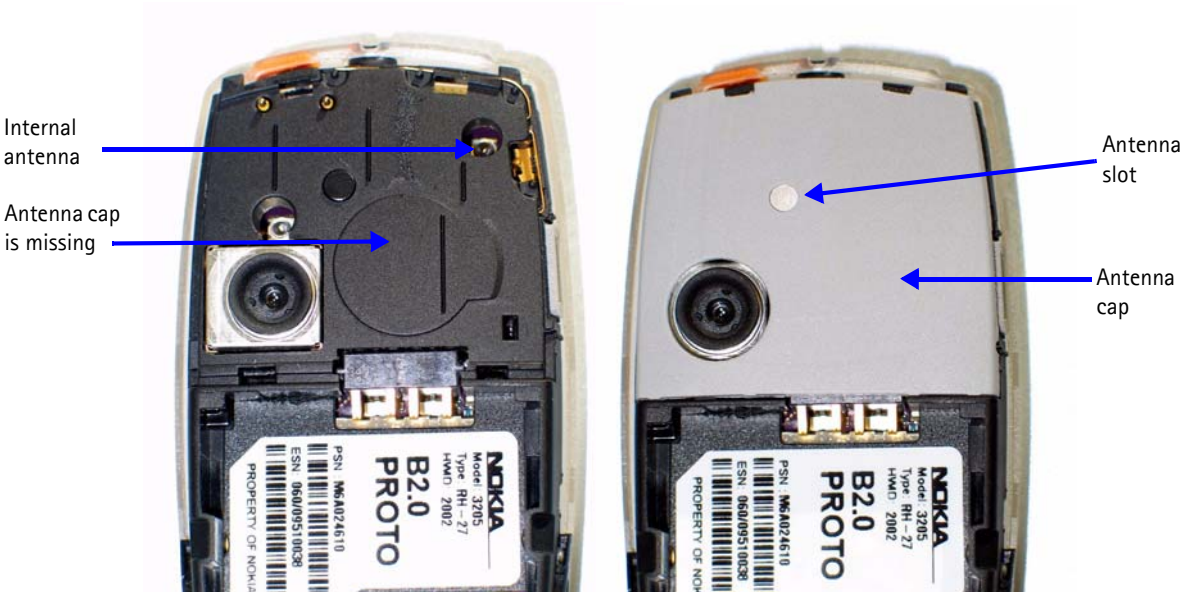

Figure 2: RM-11 phone with a missing internal antenna cap

Missing Antenna Radiator

Figure 3: RM-11 phone with a missing antenna radiator

If the antenna cap is missing or if there is a cap without a radiator, install a new antenna cap with a radiator. If the radiator looks obviously damaged (i.e., dents or corrosion) or the slot in the radiator has a significantly different shape, then install a new antenna cap with the correct radiator.

If no antenna or no radiator is installed, the antenna gain will be degraded by more than 25 dB.

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Missing GPS Antenna, Damaged GPS Feed/Ground Pin, or Damaged Heat Stake

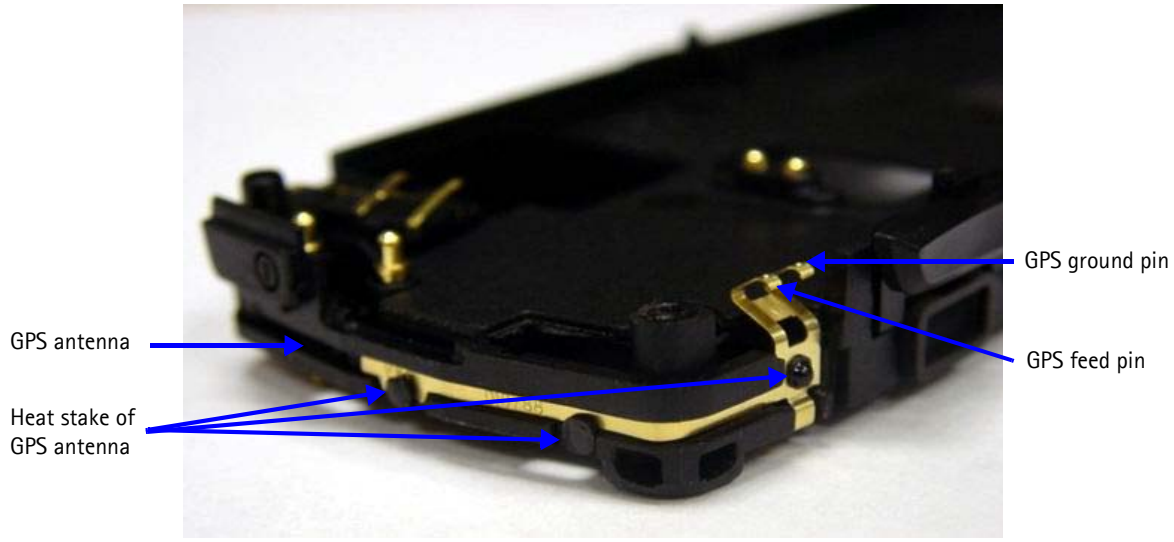

Figure 4: Back view of RM-11 (3205) C-cover with GPS antenna assembled

The RM-11 GPS antenna is heat-staked to the C-cover. If any of the following events occurs, replace the entire C-cover assembly:

- GPS antenna is missing
- GPS antenna looks obviously damaged
- Any of the three heat stakes appears damaged; the GPS antenna will be loose
- Any of the three heat stakes are over-heated and the GPS antenna melts into the C-cover; the antenna will look distorted and bent
- Either the GPS antenna feed or the ground leg is broken or bent so that neither pin touches the PWB.

RF Feed Pin/Ground Pin, IHF Speaker Pins in C-cover Missing or Damaged

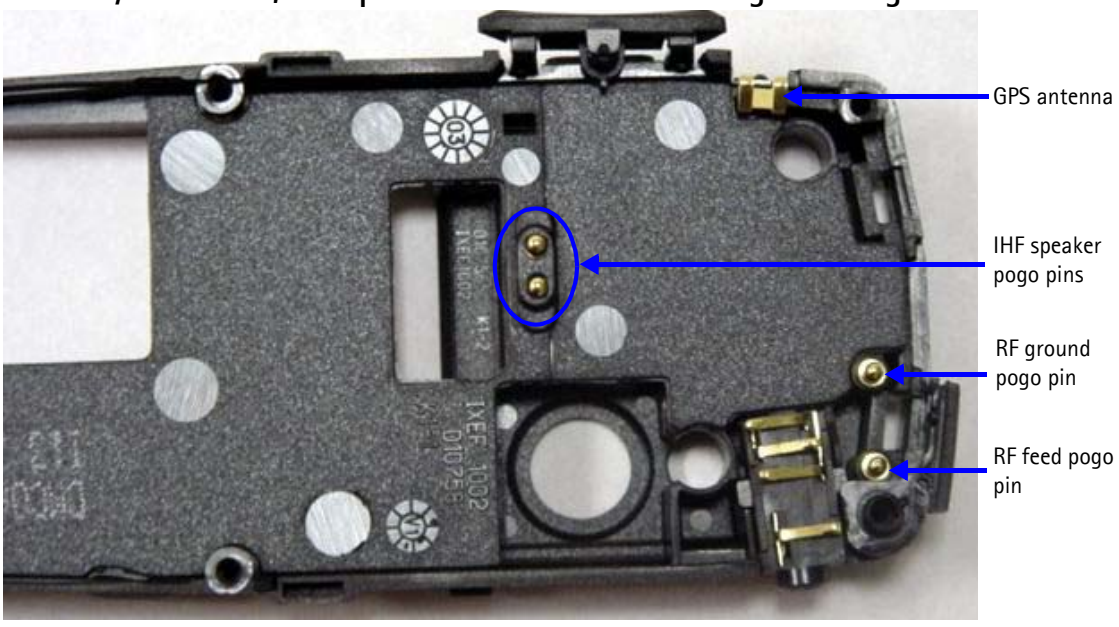

Figure 5: Inside view of the C-cover

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Two pogo pins are inserted in the C-cover. One end of the pogo pin touches the antenna, the other end touches the pad on the PWB (see Figure 5). If either of the pogo pins is missing or obviously damaged (i.e., stuck in the C-cover plastic tube, loose the inside spring force), the antenna will lose the contact to the PWB. In this case, replace the C-cover assembly with a new one.

If the RF feed does not touch the PWB, then the antenna gain will degrade by more than 25 dB. If the ground pin does not touch the PWB, then the antenna gain may degrade about 5 to 10 dB.

If either of the IHF speaker pins is damaged or missing, the speaker will not connect to the PWB and the antenna PCS gain will drop 2 dB. If this happens, replace the C-cover.

Obstructed RF Feed/Ground Pads, GPS Feed/Ground Pads, IHF Speaker Pads

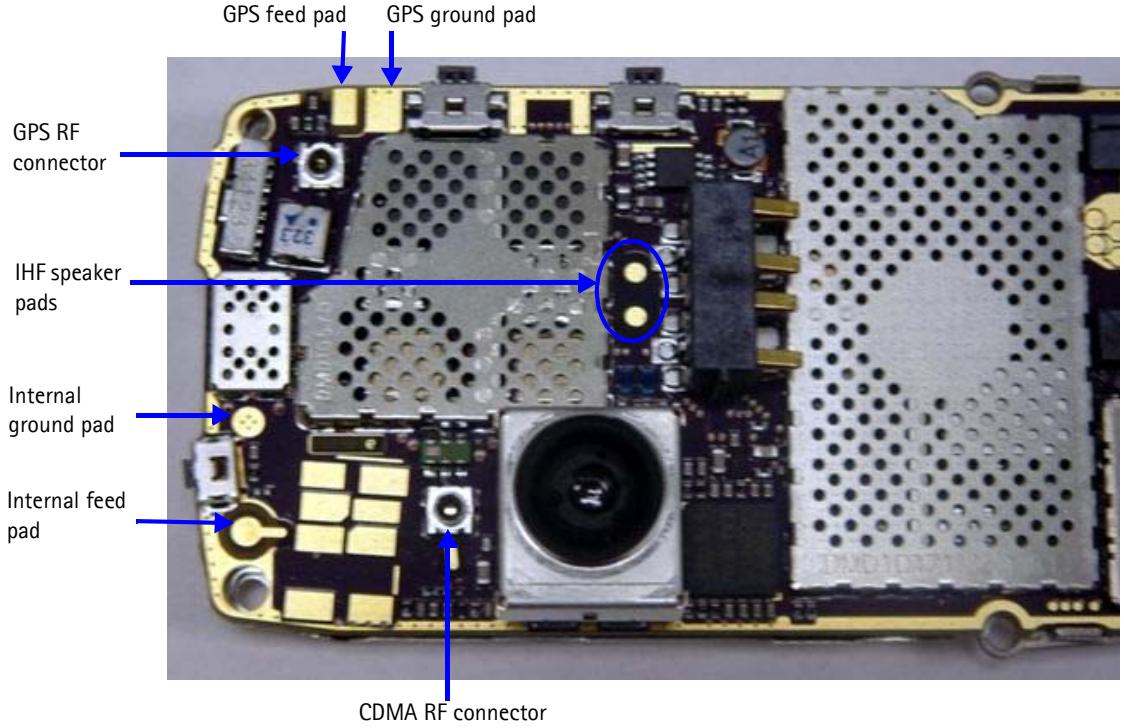

Figure 6: Obstructed RF feed and ground pads, GPS feed/ground pads, and IHF speaker pads

If the RF feed pad is obstructed, removed, or covered, then the internal antenna feed pogo pin will not touch the PWB and the antenna gain will degrade by more than 25 dB. If the ground pad is obstructed, removed, or covered, then the ground pogo pin will not touch the PWB and the antenna gain will degrade by more than 5 dB. If corrosion is present or the pad is missing, replace the PWB and phone. If either pad is obstructed or covered, then clear or clean the pad.

If the GPS feed pad is obstructed, removed, or covered, then the GPS antenna feed leg will not touch the PWB. If the ground pad is obstructed, removed, or covered, then the ground spring clip will not touch the PWB.

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If the Internal Hands Free (IHF) speaker pads are obstructed, removed, or covered, then the IHF speaker will not produce sound. The antenna PCS gain will be degraded by about 2 dB. If corrosion is present or the pad is missing, replace the PWB and phone. If either pad is obstructed or covered, clear or clean the pad.

CDMA or GPS RF Connector Failure

CDMA and GPS use the same type of RF connector. The RF connector could fail by not connecting the RF input to the RF output of the RF connector. If this happens to the CDMA RF connector, then the antenna gain will degrade by about 25 dB. If this happens to the GPS RF connector, the GPS antenna gain will degrade by about 20 dB. Test for DC conductivity between the RF input and RF output of the RF connector.

Perform the DC conductivity test without any cable attached to the RF connector. Because the RF connector is also a switch, the RF output will be disconnected from the RF input when a cable is inserted into the RF connector. When a cable is not inserted, the RF input is connected to the RF connector. The locations of both RF connectors are shown in Figure 6.

- CDMA RF input — Connects to the duplexer
- CDMA RF output — Connects to the antenna pad through vias
- GPS RF input — Connects to the GPS ceramic filter output
- GPS RF output — Connects to the GPS antenna matching circuits
- RF connector — Connects to the coaxial cable

If the RF input is not connected properly to the RF output, replace the RF connector.

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Display Assembly

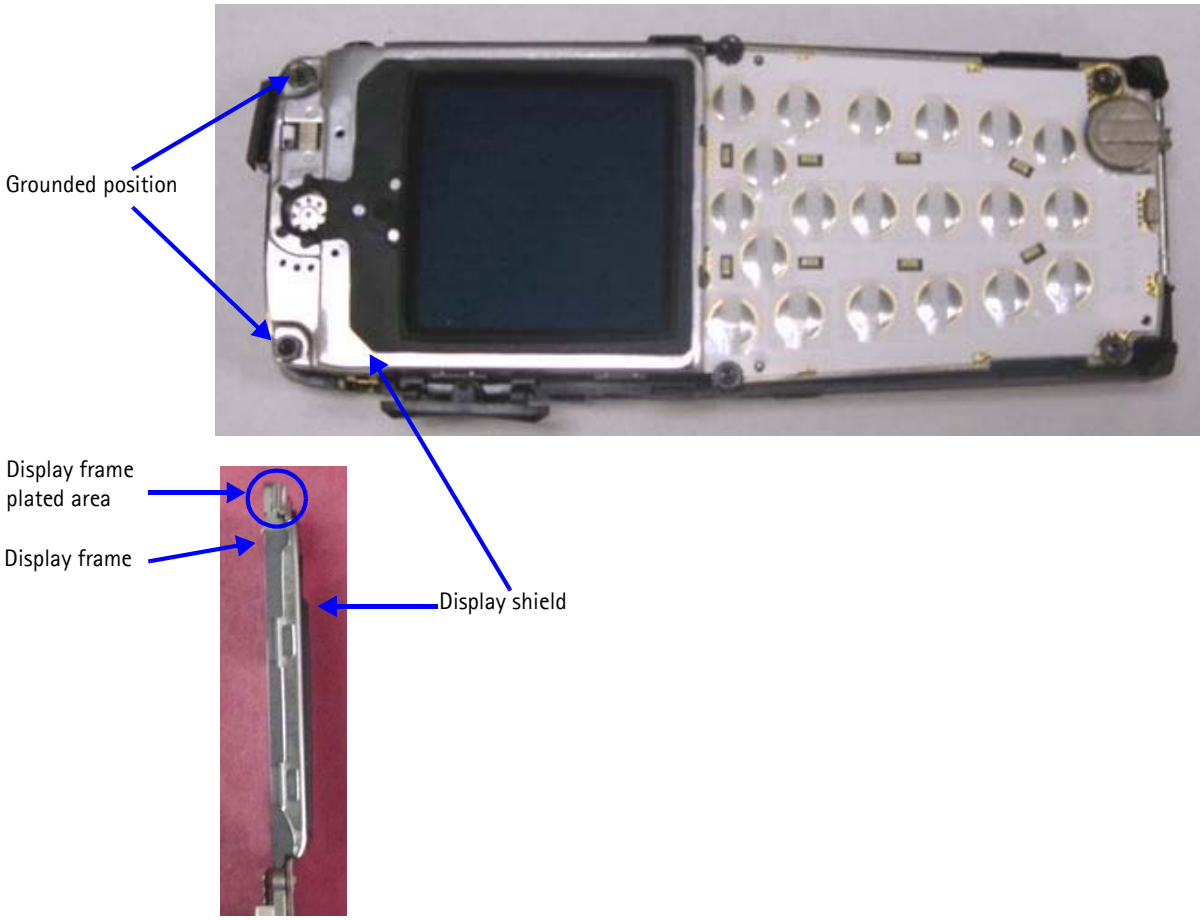

Figure 7: RM-11 display assembly (top) and side view (bottom)

First, the display shield is connected to the display frame plated area (screw boss area), and then to the PWB through the two top screws. The grounding of the display shield and frame impact the radiation performance of the phone. If the screws are loose, tighten them. If the screw bosses are stripped, replace the chassis. If the screws are missing, install new ones.

If the plated area of the display frame is cracked or the metal plating is peeled off, then the grounding of the display shield and frame will not be guaranteed. If this is the case, replace the frame.

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Wrong Display Assembly Installed

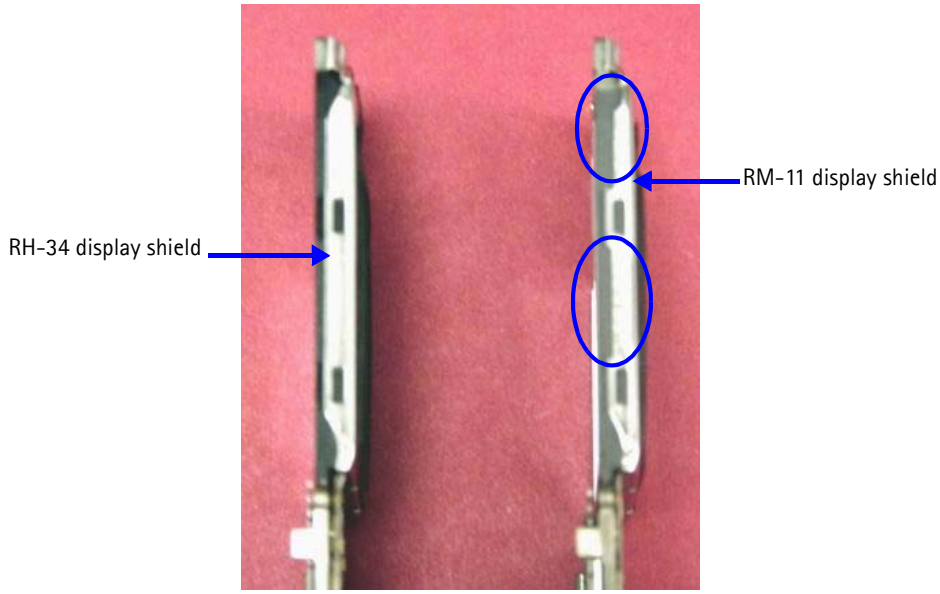

Figure 8: Side view of RH-34 and RM-11 display assembly

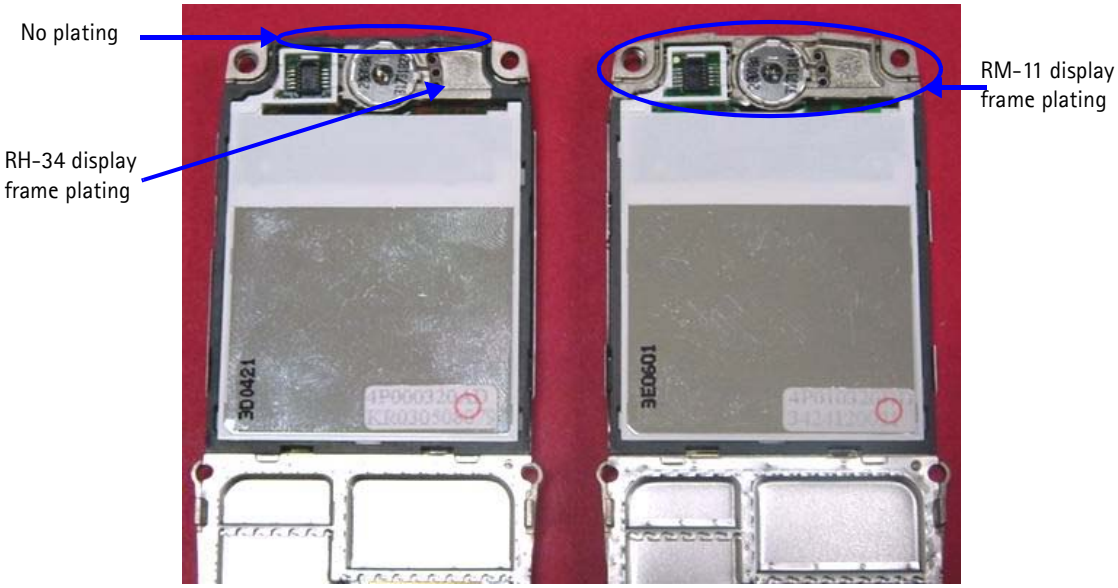

Figure 9: Back view of RH-34 and RM-11 display assembly

The RH-34 (6585) and RM-11 (3205) display assemblies are very similar. However, the side of the RM-11 display shield is different than the side of the RH-34 display shield (see Figure 8). In addition, the metal plating at the top area of the RM-11 frame is different from the top of the RH-34 frame (see Figure 9). For the RH-34 frame, the screw boss area is plated but isolated from the rest of the frame, and also there is no plating in the top area. For the RM-11 frame, the whole top area is fully plated.

If the wrong display shield or frame is installed, replace it with a correct one.

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Missing or Damaged Baseband Shield

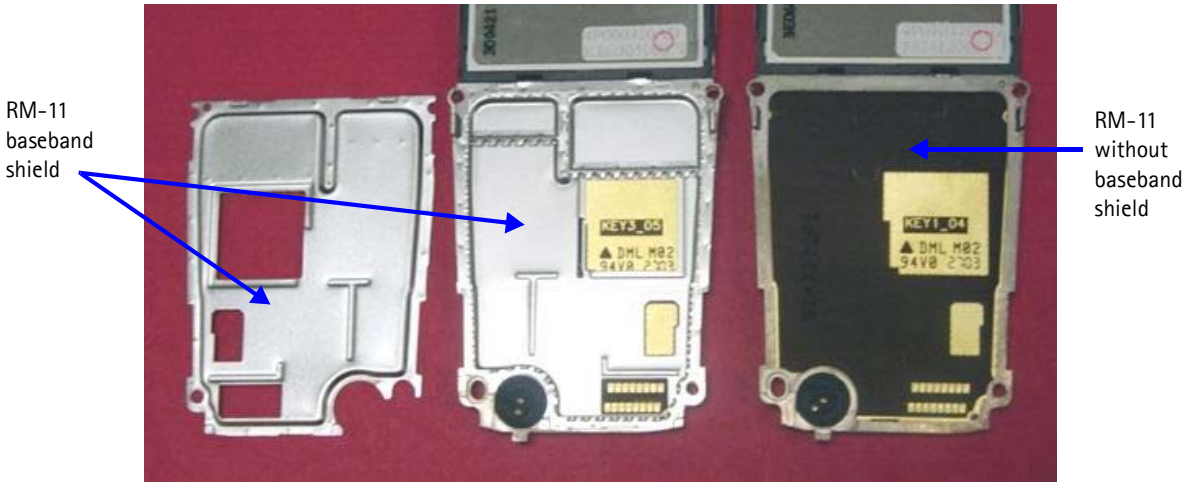

Figure 10: Baseband shield for the RM-11

The baseband shield is part of the display assembly. If the baseband shield is missing or is obviously damaged, the radiated phone performance will be impacted. Check the spring fingers on the baseband shield to ensure that they are raised up so that they make contact with the PWB when installed. If damaged, install a new baseband shield.

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